Did dog ownership influence perceptions of adult health and wellbeing during and following the Canterbury earthquakes? A qualitative study

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Abstract

The Canterbury earthquakes impacted upon the health and wellbeing of Christchurch residents. Although companion dogs can positively affect human health, there is little research exploring how dog ownership influences human health and wellbeing during and following natural disasters. We asked whether dog ownership influenced perceptions of health and wellbeing in humans during and following the Canterbury earthquakes. A general inductive approach guided analysis of our qualitative data. Seven adult women who owned dogs during and following the Canterbury earthquakes participated in semi-structured interviews that were audiotaped and transcribed verbatim. We identified three themes: 'Companionship' demonstrated how a close bond was experienced between all participants and their companion dogs. 'Support' highlights how the difference in nature of a close bond influenced the mental, physical and social support gained from a dog-owner relationship. 'Changing priorities' showed how the themes of 'companionship' and 'support' were interwoven in the way participants re-prioritized important aspects of their lives. Dog ownership influenced perceptions of health and wellbeing of our participants during the Christchurch earthquakes. We recommend that health practitioners continue to develop their understanding of companion animals as a potential source of psychological support outside the health system. We also recommend that, where possible, emergency management practitioners and policy makers help ensure that humans and their canine companions stay together following natural disasters.

Keywords: *Canterbury Earthquake, Dog Ownership, Health, Wellbeing*

Introduction

Christchurch, which has been referred to as the Garden City, has a population of approximately 367,700 and is New Zealand's second largest city (Sibley & Bulbulia, 2012). On September 4th, 2010, an earthquake of magnitude 7.1 shook the Canterbury region in which Christchurch is located. A further earthquake occurred on 22nd February 2011 (Kemp, Helton, Richardson, Blampied & Grimshaw, 2011; Kuijer, Marshall, & Bishop, 2013), generating the largest ground acceleration forces recorded globally to date, and marking the country's most deadly natural disaster in eighty years (Mulligan, Smith & Ferdinand, 2014; Sibley & Bulbulia, 2012). By November 2013, 12,774 aftershocks causing further damage and physical loss had been recorded (Kemp, Chan, & Grimm, 2013). Human lives had been lost, injuries sustained and buildings and infrastructure had been damaged. Further impacts emerged with reports detailing the significant impact of the quakes on psychological health.

Research by Fergusson, Horwood, Boden and Mulder (2014) indicated that exposure to the Canterbury earthquakes increased symptoms of mental disorders by 140% in comparison to a cohort not exposed to these events. Reported effects included heightened anxiety, fatigue, guilt, anger and hyper-vigilance, along with a decline in quality of life (Canterbury Earthquake Recovery Authority, 2014; Canterbury District Health Board, Healthy Christchurch & Mental Health Foundation of NZ, 2013). Despite these negative impacts, Cantabrians reported: pride in their ability to cope; increased support from friends and family; a

renewed appreciation of life and, a heightened sense of community (Canterbury Earthquake Recovery Authority, 2014).

Companion dogs can have a positive impact upon human psychological health and wellbeing, outside of the context of a natural disaster (El-Alayli, Lystad, Webb, Hollingsworth & Ciolli, 2010). These benefits were described by El-Alayli et al. (2010) as experienced through: 1. the presence, behaviour and touch of pets (either 'owned' or not 'owned' i.e. a visiting animal); and 2. the activity of dog-walking. Relevant benefits for humans include lowering of self-reported stress levels (Hall et al., 2004), mitigation of mental health symptoms (Peacock, Chur-Hansen & Winefield, 2012) and increased physical activity levels with associated feelings of positive wellbeing (Peel, Douglas, Parry & Lawton, 2010; Christian et al. 2012). A study conducted by Raina, Waltner-Toews, Bonnett, Woodward and Abernathy (1999) found that the presence of companion pets, including dogs, led to a small increase in quality of life in non-institutionalised adults aged 65 years old or over (n = 995). In a recent qualitative study, researchers found that companion animals (both cats and dogs) contributed to a more meaningful life by positively influencing physical, psychological and psychosocial aspects of 17 elderly male and female participants' lives (Johansson, Ahlstrom, & Jonsson, 2014). Recent literature, focussing primarily on physical benefits of dog walking, has also uncovered potential psychological benefits (Epping, 2011). In a qualitative study by Wharf-Higgins, Temple, Murray, Kumm and Rhodes (2013), participants reported health benefits of dog-walking that included relaxation and stress relief. Some studies also highlight the integral role of the dog in maintaining the positive health and wellbeing of the family unit (Wharf-Higgins et al., 2013; Peel et al., 2010).

In contrast to the predominantly positive effects of dog ownership in times of stability, there is evidence that the emotional bond between humans and dogs could also be harmful for human health and wellbeing in the context of a natural disaster (Zottarelli, 2010; Hunt, Otto, Serpell & Alvarez, 2012). Furthermore there has been a call for national disaster plans to include more coordinated management of companion animals following these events (Garde, Perez, Acosta-Jamett & Bronsvoort, 2013). Hunt et al., (2012), found that the psychological states of both human and canine Search and Rescue workers following the 2001 terrorist attacks in New York and Washington were so inter-linked that the death of a dog, or post-traumatic stress disorder in the human, could strongly influence the psychological state or behaviour of the other. Following Hurricane Katrina, the 1977 flood of Yuba County and the 2010 Haiti earthquake, it has been suggested that significant social harm and emotional trauma could have been avoided had pets been allowed to evacuate with their owners (Zottarelli, 2010; Glassey & Wilson, 2011). Zottarelli, (2010) outlined how "animals are part of the human family" (p. 119). Families tend to evacuate as a unit and thus people will endanger their own safety to save their animal companions during disaster events (Glassey & Wilson, 2011). Separation between pets and their owners during a disaster can result in significant stressors, resulting in symptoms of depression, grief, disruption of daily routine and reduced or delayed ability to cope and recover (Zottarelli, 2010; Glassey & Wilson, 2011). Animals traumatized as a result of natural disasters also contribute to owner stress and this was reported following the Christchurch earthquakes (Glassey & Wilson, 2011).

A body of research identifies companion animal ownership as a risk factor for disaster survival as well as a source of psychological distress (Thompson, Every, Rainbird, Cornell, Smith & Trigg, 2014). Alternatively, if pets were to be kept with their owners, these adverse outcomes during and following natural disasters could be mitigated (Lowe, Rhodes, Zwiebach & Chan 2009). This seems particularly important considering how Lowe et al. (2009) reported that pets provide their owners with non-judgemental support, buffering against physical and mental health problems, and decreasing reactivity to stress.

Minimal research has been conducted to explore the impact of the Christchurch earthquakes on the health and wellbeing of companion dog owners in the region. Glassey and Wilson (2011) described how these events caused considerable distress and disruption to both people and animals. As a result, health practitioners such as GP's and physiotherapists played a significant role to address mental health issues outside of their usual scope of practice, (Johal, Mounsey, Tuohy & Johnston, 2013). Pre-existing research and reports concerning the relationship between human health and dog ownership have given us a better understanding of how dogs might offer psychological support outside of the health system. However, the processes involved in these human-canine relationships warrant further investigation. The current study asked the research

question: Did dog ownership influence the perceptions of adult health and wellbeing of healthy adult humans during and following the Canterbury earthquakes? This study is part of a wider research programme led by the corresponding author, which explores the influences of dog walking and dog ownership on the health and wellbeing of both healthy adults and those living with chronic health conditions.

Method

Design. We used a qualitative study design to explore the perceived influences of dog ownership on health and wellbeing. Ethics approval was obtained through the University Of Otago Human Ethics Committee. We recruited volunteers who could offer personal accounts relating to the research question through purposive sampling (via word of mouth). Pre-developed open-ended questions were used in order to maximise rich descriptions. The General Inductive Approach (Thomas, 2006) guided our thematic analysis. The General Inductive Approach was proposed by Thomas (2006) as a straightforward, yet rigorous set of procedures for analysing raw data for a set of categories and/or themes relevant to a specific research question. Unlike many other qualitative approaches, the General Inductive Approach is not situated within a specific philosophical framework, but could be considered a pragmatic approach to thematic analysis (Thomas, 2006)

Participants. We recruited seven self-reportedly healthy adults over the age of 18 by word of mouth. Participants were sampled from Christchurch central city and townships of Kaiapoi and Rangiora which were affected by the earthquakes. Participants were included if they owned at least one dog during and following the Canterbury earthquakes of September 2010 or of February, June or December, 2011. The only exception was participant five, who acquired their dog a few days after the second of four large aftershocks. Interviewees were emailed an information sheet and written consent was gained prior to interviewing. All participants were women aged between 44 and 75, from either health or educational professional backgrounds.

Data collection. Interviews were conducted at mutually agreed locations: five in participant's homes, one at a local café, and one through Skype. Interviews lasted between 60-90 minutes. Two interviewers were present during each interview; one leading the interview and a second taking notes. Questions included: "Can you tell me a little bit about your dog and your relationship with your dog?"; "Can you tell me about the experiences of you and your dog during the Canterbury earthquakes?"; "I have read in the literature that some dog owners have feelings of anxiety and worry for their dogs after such an experience. Is this something you can relate to?"; "What do you perceive to be important for your health?"; "How did you feel that having [insert dogs name] influenced your feelings of health and well-being during and following the Canterbury earthquakes?"; and "Did the Canterbury earthquakes affect your routine with your dog? How so?". Prompts such as, "that is a very interesting point, can you tell me a little more about that…" were used to expand on participants' descriptions. Each interview was recorded using two digital audio-recording devices and recordings were transcribed verbatim. No rewards were offered for participation.

Data analysis. The General Inductive Approach, as described by Thomas (2006), guided the analysis of our qualitative data. The General Inductive approach guides the identification of themes from raw data in response to a specific research question without depending on the complexity of philosophical underpinnings (Thomas, 2006). Four members of the research team were involved in the systematic reading of transcripts with coding undertaken during transcription of each text segment.

Four verification strategies were used to help strengthen the trustworthiness of our analysis. Firstly, prior to the interviews, the research team discussed and noted preconceptions about the research question they had formed through a literature and media search. This technique is called bracketing and enables the researcher to differentiate between their own preconceptions and the experiences of the participants in order to prioritise participant experiences during analysis (Tufford & Newman, 2012).

Secondly, an additional member of the research team reviewed the blank transcripts of the first two interviews and coded these in parallel with student members of the research team. Codes from the parallel coding process were then compared and this helped to establish a coding framework for subsequent transcripts. This process also helped us to refine and add questions to our interview guide. Initial codes from all transcripts were then compared for overlap and consistency before these codes were grouped into initial categories. Our third step was to constantly revise, condense and refine these categories and compile tentative themes.

Our last step involved a member checking process where we asked an individual who had owned a dog during and following the Canterbury earthquakes and was no longer resident in Canterbury to review and comment on our analysis. This person felt that our analysis reflected her own experiences during the Canterbury earthquakes and did not raise any new considerations. Our overall timeframe for data collection and analysis was limited to a six-week period and it was therefore difficult to determine whether saturation was reached. Nonetheless, by the seventh interview we were no longer able to identify new questions or topics that could have been addressed by further interviews.

Results

Three themes were identified relating to our study question : Did dog ownership influence the perceptions of adult health and wellbeing of healthy adult humans during and following the Canterbury earthquakes? Theme one, 'companionship' demonstrated how a close bond was experienced between all participants and their companion dogs. Theme two, 'support' highlighted how differences in the nature of these close bonds influenced the mental, physical and social support gained from a dog-owner relationship. Theme three, 'changing priorities' showed how 'companionship' and 'support' were interwoven as participants re-prioritized important aspects of their lives. This reprioritization changed participant behaviours in ways that both positively and negatively influenced health. Each theme is further detailed below.

Companionship. Dogs, as companion animals, appear to often share a close bond with their owner. In our sample, the nature of this bond differed between participants. All of our participants referred to their dogs as a friend or family member. Where five of seven participants described a mutually supportive relationship in anthropomorphic terms, one participant two's interview described themselves as being the "top dog". Whilst this participant did not describe any emotional attachments to her dogs, it was evident that she provided a high standard of care and took precautions to protect her dogs from earthquake related harm. Most participants considered their companion dog as someone they could talk to or spend quality time with. Participant six described this talking as "therapeutic".

Participants expressed that the unconditional love from their companion dog contributed to the strength of their bond. This was reflected through consistent greetings from the dog and non-judgmental actions of the dog when the owner had experienced an "awful shift" (participant four). Some owners felt they could see unconditional love expressed through their dog' eyes, as well as through the dog's desire to be constantly by their side. This love induced feelings of guilt in the owners when leaving their dog(s) home alone. For example, participant three stated that their dog was, "So buoyant, always joyful to meet you, if you come home and you have had a bad day or whatever, there is no judgement or anything, you know how dogs are, it's just unconditional love."

Participants often described positive, happy characteristics of their dog whereas negative characteristics were brushed off, given excuses for, or even laughed about.

> *She's wicked, and people often say that dogs don't plan things, but she does. Um for example, she doesn't like when we go out at night. She gets cross with us. So she'll go and get anything of ours that she can find and she'll bring it and she'll plonk it right in front of the sliding door… She just likes sort of pushing the limits in a funny sort of way.*
>
> (participant seven)

Having a companion dog was generally described as having a positive impact on the health of owners during the Canterbury earthquakes, particularly in the form of providing comfort. A strong emotional bond appeared to act as a de-stressing mechanism facilitated through the distraction of caring, comforting and securing safety of the dog. This companionship also enabled the owner to "spread their emotional load" (participant three) during the quake events. Participants were able to express affection and be comforted by their dog with no pressure of judgement on their reactions to the earthquakes. In this way it is possible that dog owners experienced less perceived negative psychological impacts than those without a companion dog. This was highlighted by participant three:

> *Um...I suppose in a sense she has a certain stress component to her. Like you come home and you've had a difficult client, or, pressured with ACC to get a report in or something like that, you know. Here she is, not a care in the world, haha see (acting out dogs mannerisms). I suppose in a way, even though I don't think about it, it probably does diminish it a little bit. However because you do have to think about someone else and not yourself, you know, she's a distraction…you've got the dog there you*

can spreads the load a little bit more, you know…a little bit more normality.

The close companionship described by participants also resulted in perceived negative health impacts for some owners. These impacts were characterised by reported worry, stress and anxiety for their dog's psychological and physical welfare when separated from owners during the quake. For example, participant six appeared to worry more about the needs of her older dog following the February 2011 earthquake: "She is so vulnerable, so dependent on you and that you would worry about getting her medications, her tablets, her food and because we had to run didn't we, we had to run to the door quickly because the water was coming higher."

Participant two, who sent her dogs to live temporarily in a farm outside Christchurch city following the February 2011 earthquake, did not express this concern. They felt that the security of a cage and the company of each other was enough once they returned home. Where dogs were part of a family unit, participants felt that although they loved their dogs as a member of the family, that human children took priority and that dogs were "always at the bottom of the pecking order" (participant three). Our analysis indicated that the strength of the emotional bond somewhat influenced the nature of perceived 'support' between dog and human. This influence is further outlined in the following section.

Support. Participants experienced support from various sources. Family and friends were the most highly valued source of support and participants reported that spending time together with friends and family gave a sense of security and a temporary opportunity to relieve stress and anxiety. Often considered part of the family, dogs gave support through provision of company, through dependence on their human owner, and through their role as a social catalyst.

Companion dogs were described as a distraction from the stressors surrounding participants. Most participants acknowledged that the loving, non-judgmental and almost naive nature of their pet dog was an undeniable way in which they forgot about their stress and anxiety related to the earthquakes. Participant three stated that, "As I said she is aware of whatever is happening. It wasn't like she was a dedicated member that reduced stress, she was just a part of family overall."

All participants stated that dogs supported them through established routines and responsibilities. There was a shared view that participant's dogs were dependent on them for food, general care and walking. Participants recognised that dog-related routines provided both the owner and the dog with a sense of normality following the earthquakes. Owners often reported a need to stay positive to reassure their anxious dog and to prevent the dog from developing negative associations with aftershocks. Participant two felt that she had to maintain a strong and confident exterior, stating that, "Because I am boss, so I know what to do." Participant seven described how having a dog provided motivation to continue with usual activities: "You just gotta get on and do it, you got to feed her and look after her, you know you can't just, if you were someone that just felt you had to curl up the bed or whatever you can't when you have got a pet. You have got to think of them."

Some participants described their dogs as social catalysts and as such, a means of social support. As a social catalyst, their dogs facilitated interactions with friends, brought families closer together, or created a perception of normality while walking within the community. This timely enhancement of social support at the time of the earthquakes may have resulted in more positive feelings of social wellbeing.

The perceived support from a companion dog during and following the earthquakes appeared to vary according to the nature of the bond shared. For example, participant four was particularly worried about her family. She admitted that she had not given her dog much thought during the February earthquake. However, this participant noted that the dog "hung around me more" (participant four). Participant two, despite providing care and leadership for her dogs, did not describe an emotional bond during the interview. Descriptions provided by these two participants suggest that they did not identify their companion dogs as a strong source of support during the Canterbury earthquakes.

Both participants two and four reported how one of their priorities as front line health care professionals was to make their way into work, to look after the sick and wounded. This will be discussed further in the theme, 'changing priorities'. Participant two, who described herself as a means of support for others, reflected this best by saying, "Even if it's what I did that first day, with only starting someone on that step (talking to people). It would of helped... . I probably helped a huge number of people that I'm not even aware of... . and I helped myself at the same time".

Changing priorities. Following the Canterbury earthquakes, participants experienced a process of re-prioritization concerning what they considered most important in their lives. For some participants, this process was influenced by the nature of their human-canine bond and by the support they were able to give and receive from their dog. For others, new priorities involved giving support to, and receiving support from, other humans. This process of re-prioritization had both positive and negative impacts on health and wellbeing and reflected the place of the dog within the family.

It appeared that participants who expressed a strong emotional bond with their dog became increasingly worried about how the stress of the earthquakes was affecting the psychological and physical health of their dog. Prioritizing concern for their dog at times led to higher levels of stress. Many described separation anxiety for their loved ones; wanting to connect and remain in constant touch with family members, including their dog. Some participants spoke about feelings of guilt for having to leave the dog at home alone and one considered buying a second dog for company. During one of the major earthquakes, the first thing participant one did was grab her dog. Participant seven spoke of how she felt more responsible for her dog and wanted to constantly check on her welfare:

> *I probably felt more responsible for her than I did before, because before, I knew that she was fine and happy at home by herself at home and all that sort of thing but I worried about her more post-earthquakes… And I know it sounds ridiculous but I used to say to [husband]... "I just wish I could text her and say 'it's okay, you're okay, I'll be home" or something like that. Because it was to reassure her, even though she probably wasn't even that worried, that was she was okay. So I felt more responsible for her... being happy, being okay... And not being confused about what was going on.*

Re-prioritization of what was considered important appeared to increase a sense of mindfulness and gratitude while leading to a disregard for material possessions. A heightened appreciation for one's life, relationships (including human-canine) and community was described by participants. Many participants identified a balance between work and leisure as an important priority. This often involved taking the dog for a walk. Participant four's interview summarises this experience, shared by most participants in our study: "dogs are good for the soul because they make you get out and exercise". Participant two did not describe a heightened relationship with her dogs following the earthquakes. However, during this period one of her dogs died of old age and she acquired a new dog. She did indicate that that the nature of her walks had changed but also that this appeared due to the new dog rather than the earthquakes.

A new appreciation and compassion for other Cantabrians was also reported by participants. This appeared to result in feelings of resilience and pride in their own ability to cope. Each of our participants made time to connect with the people around them, whether it was looking out for a neighbour, comforting a friend or even a stranger. Participant three held a barbecue at which she felt her dog helped de-stress her guests by "gleefully" greeting them.

All participants re-prioritized safety and became more conscious of environmental dangers such as falling objects or being trapped in an underground car park. Participant two placed extra shielding over and around their dogs' crates whilst she was at work to protect her dogs from any physical harm during aftershocks. Participant six decided to take the dog with them when flying to different parts of the country and others changed boundaries within the family home so that dogs that had been barred from areas such as the bedroom prior to the earthquakes were now allowed free access. Participant three's interview illustrates an example of changed boundaries:

> *Up until that time [dog's name]'s limit of the house was the doorway to the kitchen and the hallway. She was really upset at that period so they, she ended up sleeping by the bed down there, and she continues to do so… Yeah, because you know how the earthquakes went on and on and on, and we just didn't feel it would be fair on her to be down here scared so I guess when our kids left home we softened up a little bit, so yeah, she now has free rein of the house, but she does have a limit with what she can do within that.*

Conclusion

This study examined the perceived effects of dog ownership on the health and wellbeing of humans during and following the Canterbury earthquakes. The findings of our study suggest that dog ownership does impact upon the health and wellbeing of humans during and following a disaster event.. The nature of

the emotional bond and the perceived support from a canine companion can lead to: re-prioritization of the dog's status within the family; additional concern for the dog's physical and psychological safety; and stressful re-homing decisions. Participants who expressed a stronger emotional bond relied more upon their canine companions during these challenging times. The dog's unconditional love towards their owner was treasured and provided a sense of security and normality. Participant two, who did not describe this emotional bond, appeared to gain some comfort in being a strong leader for her dogs.

There has been little prior research focused on identifying the influence of a companion animal on health and wellbeing during and following a disaster event. Our study has identified possible links between the literature describing the positive effects of companion animals (Lowe et al., 2009) and negative impacts on owner health and wellbeing in this situation (Zotarelli, 2010; Fergusson et al., 2014; Kemp et al., 2011). Pet ownership can be a risk factor for injury or death during a disaster, through owners putting themselves at risk for the welfare of their animal companion (Thompson et al., 2014; Zottarelli, 2010). Lowe et al. (2009) found that support from pets may have played a protective role from adverse effects on mental health after Hurricane Katrina. Similarly, they proposed that pets can decrease reactivity to stress in a disaster. In our study, this protective role appeared to be enhanced by the strength of the emotional bond. This was also identified by Boldt and Dellmann-Jenkins (1992), who reported that an increase in the wellbeing of elderly people was dependent on the degree of attachment to their pet, with those describing a closer attachment experiencing a heightened therapeutic benefit. Thompson et al. (2014) also described how this bond was able to enhance resilience and recovery following a disaster.

We identified that the positive perceived effects of having a dog may mitigate some of the negative health-related effects of the Canterbury earthquakes. We found that companion dogs appeared to reduce stress in adults, especially when the emotional bond was strong. However, this bond may result in owners taking risks to protect and prioritize their pets during disaster, with increased anxiety and stress if separated. Hunt et al., (2012) longitudinally followed the psychological well-being of human handlers, and the health and behaviour of their canine partners in Search and Rescue (SAR) personnel following terrorist attacks in New York and Washington states in 2001. Findings indicated that SAR personnel were less likely to experience long term psychological trauma than other emergency personnel with no canine partner. However, longitudinal psychological states of both human and canine were so inter-linked that the death of a dog, or post-traumatic stress disorder in the human, could influence the psychological state or behaviour of the other (Hunt et al., 2012).

New Zealand's new Civil Defence and Emergency Management (CDEM) plan (Ministry of Civil Defence and Emergency Management, 2015) is a welcome revision because this is the first time the CDEM ministry has acknowledged the need for a structured and organised approach to animal welfare, including companion animals, during an emergency event. Nonetheless, we recommend that welfare agencies, rescue workers, and health care professionals continue to consider potential short and long-term positive health consequences of keeping pets and their owners together in, and following, a disaster.

This study had several limitations. Only seven participants were recruited, most of whom identified themselves as of NZ European ethnicity. The sample mostly comprised women aged between 44 and 75 who were health professionals and this population have been shown to have higher self-reported effects of disasters (Canterbury District Health Board et al., 2013). In addition, we did not recruit participants from all the major geographical areas affected by the Christchurch earthquakes. Future studies would benefit from a sampling strategy that aims to capture demographic diversity. Such samples may include diverse genders, and people of different ages and professions. Given that our participants all freely volunteered, this may have attracted a sample with a greater interest in either their dog, health and wellbeing, or the earthquake.

The timeframe for this study was limited to a six-week period. However, it seems that saturation was reached for the demographic representation of this study sample because no new potential themes were identified by the seventh interview. In addition, our independent member checker felt that the analysis reflected her own experience and did not offer any further insights which may have altered our analysis.

Companion dogs appear to have influenced human health and wellbeing during and following the Christchurch earthquakes. Positive influences included

a strong emotional bond, faithful companionship, and maintenance of routines. Negative influences included increased worry relating to the needs of dogs and anxiety about having to leave the dogs at home while working. We recommend that health practitioners continue to develop their understanding of companion animals as a potential source of psychological support outside the health system. We also recommend that, where possible, emergency management practitioners and policy makers ensure that humans and their canine companions stay together following disaster events.

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